

WHAT IS CLAIMED IS:

1. A transaction card having machine readable information and a visible display comprising:
 - 5 a.) a card body;
 - b.) machine readable information on the card body;
 - c.) a flexible display affixed to the card body for displaying information related to the machine readable information, the display including a pressure-insensitive polymer-dispersed
10 cholesteric liquid crystal material having a first planar reflective state and a second transparent focal conic state, which is responsive to an applied voltage to display information wherein said information persists when the voltage is removed; and
 - d.) an array of conductors connected to the display for applying
15 selected voltages from an external display driver to the display to change the state of the display.
2. The transaction card claimed in claim 1 wherein the machine readable information is selected from the group comprising a semiconductor
20 element, a magnetic coating and machine readable printing.
3. The transaction card in claim 1 wherein the transaction card is a card selected from the group consisting of a gift card, a phone card, a bank card, a credit card, an inventory control card, and a transaction
25 authorization card.
4. The transaction card of claim 1 wherein the pressure-insensitive polymer-dispersed cholesteric liquid crystal is cholesteric liquid crystal dispersed in polymer at a polymer to liquid crystal ratio that renders the composition
30 pressure insensitive.

5. The transaction card of claim 1 wherein the conductors are a printed emulsion of carbon in a polymer.
- 5 6. The transaction card of claim 1 wherein the display is a 7 segment numeric display.
7. A transaction card system, comprising:
- 10 a.) a transaction card having a card substrate, machine readable information on the card substrate, a flexible display affixed to the card substrate for displaying information related to the machine readable information, the display including a pressure-insensitive polymer-dispersed cholesteric liquid crystal material having a first planar reflective state and a second transparent focal conic state,
- 15 which is responsive to an applied voltage to display information wherein said information persists when the voltage is removed, and an array of conductors connected to the display for applying selected voltages from an external source to the display to change the state of the display; and
- 20 b.) a card processor including a reader for reading the machine readable information, a processor for receiving the information and performing a calculation to produce information for display, and writer having an array of contacts for contacting the array of conductors on the card for writing the calculated information onto
- 25 the display.
8. The system claimed in claim 7 further comprising an external data source storing information related to the machine readable information on the card and accessible by the processor.

9. The system claimed in claim 7 wherein the conductor array includes row and column conductors and the write includes row and column drivers for applying selected voltages to the row and column conductors.
- 5 10. The system claimed in claim 7 wherein the display is a passive matrix display driven by row and column voltages and wherein a low voltage has no effect on the state of the liquid crystal, an intermediate voltage produces a focal conic state and a high voltage produces a planar state in the liquid crystal.
- 10 11. The transaction card of claim 1, wherein the display is a passive matrix display driven by row and column voltages and wherein a low voltage has no effect on the state of the liquid crystal, an intermediate voltage produces a focal conic state and a high voltage produces a planar state in the liquid crystal.
- 15 12. The transaction card of claim 1 wherein the card body is a thermoplastic polymer selected from the group consisting of polyester and polycarbonate
- 20 13. A method of making a transaction card having machine readable information and a visible display comprising the steps of:
- 25 a.) providing a card body;
- b.) applying an element for storing machine readable information to the card body; and
- 30 c.) producing a flexible display for displaying the display including a pressure-insensitive polymer-dispersed cholesteric liquid crystal material having a first planar reflective state and a second transparent focal conic state, which is responsive to an applied voltage to display information wherein said information persists

when the voltage is removed, the display including an array of conductors for applying selected voltages from an external display driver to the display to change the state of the display; and

d.) affixing the display to the card body.

5

14. The method claimed in claim 13 wherein the step of producing a display includes the steps of:

- c1.) providing a polymer-dispersed cholesteric liquid crystal dispersion wherein the polymer to liquid crystal ratio is sufficient to render a
- 10 processed layer of the dispersion pressure insensitive;
- c2.) providing a substrate having a first conductor;
- c3.) coating the dispersion on the substrate; and
- c4.) printing the array of conductors onto the coated dispersion.

15. The method claimed in claim 14 wherein the cholesteric liquid crystal is dispersed in an aqueous gelatin solution and including the step of drying the dispersion after coating.

16. A method of conducting a transaction comprising the steps of:

- a.) providing a transaction card having a card substrate, machine
- 20 readable information on the card substrate, a flexible display affixed to the card substrate for displaying information related to the machine readable information, the display including a pressure-insensitive polymer-dispersed cholesteric liquid crystal material
- 25 having a first planar reflective state and a second transparent focal conic state, which is responsive to an applied voltage to display information wherein said information persists when the voltage is removed, and an array of conductors connected to the display for applying selected voltages from an external source to the display to
- 30 change the state of the display;

- b.) providing a card processor including a reader for reading the machine readable information, a processor for receiving the information and performing a calculation to produce information for display, and writer having an array of contacts for contacting the array of conductors on the card for writing the calculated information onto the display.
- 5
- c.) employing the card processor to initialize the displayed information on the card;
- d.) using the card in a transaction; and
- 10 e.) employing the card processor to update the display on the card, reflecting the results of the transaction.